

REMARKS

Claims 1 and 7 have been amended to overcome the Section 112 rejection.

Claims 1-4, 6-12 and 14 stand rejected as being obvious over Koch U.S. 3,152,865 in view of Noweck U.S. 6,773,690. The rejection is respectfully traversed.

It is the Examiner's position that the primary reference to Koch teaches making boehmite alumina by hydrothermal aging of aluminum alcoholate in the presence of a chelating agent comprised of an organic component containing multicarboxylate ions or polycarboxylic radical at a pH of greater than 7, preferably between 8 and 9.5. The Examiner recognizes that the Koch reference does not reach that there is any aging process performed at a temperature between 120 and 250°C. The Examiner concludes, however, that it would have been obvious to use the process of Koch including the use of a metallic or non-metallic oxide in a hydrothermal aging process requiring an aging temperature of between 40 and 240°C in view of the Noweck reference and that the suggestion or motivation to make the combination would have been to make crystalline boehmite alumina as disclosed in column 3, lines 5-13 of Koch.

It is respectfully submitted that the Examiner has overlooked a critical teaching of the Koch reference. Specifically, Koch teaches against aging under hydrothermal conditions as set forth in all of Applicant's independent claims. In column 3, lines 56 *et seq* Koch teaches:

"Aging the washed hydrate is substantially avoided by the chelating agent. The term "aging" as employed herein refers to the transformation of the alumina monohydrate to its trihydrate forms. Aging can be promoted under certain conditions, for instance, by maintaining the aluminum monohydrate in contact with water or allowing it to remain in its precipitated state and in contact with an aqueous medium . . . In the present invention, substantial aging of the aluminum monohydrate is avoided by contacting the aluminum monohydrate with a chelating agent . . . the aluminum monohydrate is generally not subjected to

conditions which promote aging over about 12 days and preferably not over 8 days prior to drying.”

It is absolutely clear from the cited lines that to achieve the goals of the Koch reference, hydrothermal aging as that term is used in connection with the limitations in Applicant's independent claims is absolutely to be avoided. Indeed, a fair reading of Koch is that hydrothermal aging as called for by Applicant's claims, would frustrate the goals of the Koch reference.

That Koch does not contemplate hydrothermal aging of the type claimed by Applicant is exemplified in Examples I-VIII of Koch where there is absolutely no teaching of hydrothermal aging as claimed by Applicant. In short, the only aging contemplated by Koch is allowing the slurry to stand for some period of time but most decidedly not at the elevated temperature ranges called for by Applicant's claims.

It is beyond peradventure that the Koch reference teaches away from hydrothermal aging. That being the case, to import into the Koch teaching the hydrothermal aging taught by Noweck would totally frustrate the teachings of the Koch reference and would vitiate the invention. Applicant submits that it is well settled law that references cannot be combined to establish a prima facie case of obviousness when the primary reference teaches away from the claimed invention and the incorporation of the teachings of the secondary reference would render the process of the primary reference inoperable for its intended purpose.

It is further to be noted, that in Applicant's claimed process, the hydrolysis is conducted at higher pH values than those taught by Koch. Furthermore, with particular reference to newly added Claim 15, Applicant claims hydrolysis at a temperature of 50 to 95°C in conjunction with hydrothermal aging at a temperature of from 120 to 250°C to further distinguish, if necessary, over Koch. It is respectfully submitted that the combination of Koch and Noweck does not render Applicant's claims obvious.

Claims 1-4, 6-12 and 14 stand rejected as obvious over Noweck in view of Koch. Basically this is a reversal of the prior rejection in view of those two references with Noweck now being the primary reference. As to this combination, the Examiner recognizes that Noweck does not teach that the hydrolysis is carried out in the presence

of a carboxylic acid and in an attempt to overcome that infirmity relies on Koch with the conclusion that it will be obvious to the skilled artisan to perform the process of Noweck using the chelating agent (carboxylic acid), etc., of Koch. The Examiner further states that the motivation for this combination would be to perform a partial aging of alumina gel containing boehmite to obtain a stabilized amount of trihydrate. This combination of references is also flawed.

To begin with, Noweck contains no teaching regarding hydrolysis of the aluminum alcoholate in the presence of substituted carboxylic acid nor for that matter does Noweck require hydrolysis at a pH value higher than 9. It is well known that unless a pH adjusting agent is added to raise the pH of the aqueous aluminum alcoholate, a pH value of greater than 9 cannot be obtained. Noweck is not concerned with the hydrolysis of aluminum alcoholate but rather special hydrothermal aging conditions for boehmite alumina. Indeed, since hydrothermal aging generally of the type claimed by Applicant is clearly contemplated by Noweck, if Koch teaches that such hydrothermal aging conditions are to be avoided, why would the skilled artisan have any reason to believe that the teachings of Koch and Noweck could be combined? Furthermore, the Examiner's suggestion/motivation of the skilled artisan vis-à-vis performing partial aging of aluminum gel containing boehmite to obtain a stabilized amount of trihydrate is not seen as being germane at all to the Noweck invention, the goal of which is to provide boehmite aluminas having unusual morphologies. Applicant is at a loss to know why obtaining stabilized amounts of trihydrate by partial aging of aluminum gel as taught by Koch, would be of any benefit in Noweck or even desirable.

The process of Koch and Noweck are totally different and any attempt to combine one with the other frustrates the teachings of both of the references. Again, Noweck expressly teaches that to achieve the benefits of the invention, long-term hydrothermal aging in the presence of water and metallic or non-metallic oxides or oxide hydrates, except for aluminum oxide or aluminum oxide hydrate is necessary. There is absolutely no suggestion in Noweck that carboxylate ions required by Koch could be employed in the Noweck process.

There is absolutely no rational basis upon which the teachings from Koch can be incorporated into Noweck or vice versa without violating the express teachings of those references.

Additionally, with respect to Claims 15 and 17, Koch and Noweck are inapposite since there is no teaching in either of those references of adding a pH adjuster to conduct the hydrolysis as opposed to simply employing the pH that results from the aluminum alcoholate water mixture.

In view of the foregoing amendments and remarks, it is respectfully submitted that all claims are in condition for allowance, which is hereby earnestly solicited and respectfully requested.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'C. James Bushman', with a long horizontal line extending to the right.

C. James Bushman
Reg. No. 24,810

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BROWNING BUSHMAN P.C.
5718 Westheimer, Suite 1800
Houston, Texas 77057-5771
Tel.: (713) 266-5593
Fax: (713) 266-5169